Claims

What is claimed is:

1. A method for preventing or removing biofilm on a surface, comprising contacting the surface with an effective amount of a composition comprising one or more acylases and a carrier to degrade a lactone produced by one or more microorganisms, wherein the degradation of the lactone prevents or removes the biofilm.

2. The method of claim 1, wherein the lactone is a homoserine lactone.

3. The method of claim 2, wherein the homoserine lactone is an N-acyl-L-homoserine lactone.

4. The method of claim 3, wherein the N-acyl-L-homoserine lactone is N-(3-oxododecanoyl)-L-homoserine lactone.

5. The method of claim 3, wherein the N-acyl-L-homoserine lactone is N-butyryl-L-homoserine lactone.

6. The method of any of claims 1-5, wherein the biofilm is comprised of one or more microorganisms selected from the group consisting of an aerobic bacterium, anaerobic bacterium, fungus, algae, and protozoan.

7. The method of claim 6, wherein the aerobic bacteria is an *Aeromonas, Burkholderie, Escherichia coli, Flavobacterium, Microbacterium, Pseudomonas, Salmonella,* or *Staphylococcus* strain.

8. The method of claim 6, wherein the anaerobic bacteria is a *Desulfovibrio* strain.

9. The method of claim 6, wherein the fungus is a yeast or filamentous fungus.

10. The method of claim 9, wherein the yeast is a *Candida* strain.

11. The method of any of claims 1-10, wherein the surface is a hard, soft, or porous surface.

12. The method of any of claims 1-11, wherein the acylase is obtained from a plant, animal, or microbial source.

13. The method of claim 12, wherein the acylase is obtained from a bacterial or fungal strain.

14. The method of claim 13, wherein the bacterial acylase is obtained from an *Acetobacter*, *Acinetobacter*, *Agrobacterium*, *Alcaligenes*, *Arthrobacter*, *Azotobacter*, *Bacillus*, *Comamonas*, *Clostridium*, *Gluconobacter*, *Halobacterium*, *Mycobacterium*, *Rhizobium*, *Salmonella*, *Serratia*, *Streptomyces*, *E. coli*, *Pseudomonas*, *Wolinella*, or methylotrophic bacterium strain.

15. The method of claim 13, wherein the fungal acylase is obtained from a yeast or filamentous fungus.

16. The method of claim 15, wherein the yeast acylase is obtained from a *Candida*, *Kluyveromyces*, *Pichia*, *Saccharomyces*, *Schizosaccharomyces*, or *Yarrowia* strain.

17. The method of claim 15, wherein the filamentous fungal acylase is obtained from an *Acremonium*, *Aspergillus*, *Aureobasidium*, *Chrysosporium*, *Cryptococcus*, *Filibasidium*, *Fusarium*, *Humicola*, *Magnaporthe*, *Monilia*, *Mucor*, *Myceliophthora*, *Neocallimastix*, *Neurospora*, *Paecilomyces*, *Penicillium*, *Phanerochaete*, *Piromyces*, *Schizophyllum*, *Sclerotium*, *Sporotrichum*, *Talaromyces*, *Thermoascus*, *Thielavia*, *Tolypocladium*, or *Trichoderma* strain.

18. The method of any of claims 1-17, wherein the effective concentration of the one or more acylases is about 0.001 to about 1 g of acylase per kilogram of water.

19. The method of claim 18, wherein the effective concentration of the one or more acylases is about 0.01 to about 1 g of acylase per kilogram of water.

20. The method of claim 19, wherein the effective concentration of the one or more acylases is about 0.01 to about 0.5 g of acylase per kilogram of water.

21. The method of claim 20, wherein the effective concentration of the one or more acylases is about 0.01 toabout 0.1 g of acylase per kilogram of water.

22. The method of any of claims 1-21, wherein the one or more acylases have a pH optimum in the range of about 3 to about 10.

23. The method of claim 22, wherein the one or more acylases have a pH optimum in the range of about 4 to about 9.

24. The method of claim 23, wherein the one or more acylases have a pH optimum in the range of about 5 to about 8.

25. The method of any of claims 1-24, wherein the one or more acylases have a temperature optimum in the range of about 5°C to about 100°C.

26. The method of claim 25, wherein the one or more acylases have a temperature optimum in the range of 25°C to about 75°C.

27. The method of claim 26, wherein the one or more acylases have a temperature optimum in the range of about 25°C to about 50°C.

28. The method of any of claims 1-27, wherein the surface is contacted with the one or more acylases for at least 1 to 7 days.

29. The method of claim 28, wherein the surface is contacted with the one or more acylases for at least 1 to 5 days.

30. The method of claim 29, wherein the surface is contacted with the one or more acylases for at least 1 to 3 days.

31. The method of claim 30, wherein the surface is contacted with the one or more acylases for at least 1 to 2 days.

32. The method of any of claims 1-31, wherein the composition further comprises one or more agents selected from the group consisting of dispersants, surfactants, detergents, other enzymes, anti-microbials, and biocides.

33. The method of claim 32, wherein the other enzymes are selected from the group consisting of an aminopeptidase, amylase, carbohydrase, carboxypeptidase, catalase, cellulase, chitinase, cutinase, cyclodextrin glycosyltransferase, deoxyribonuclease, esterase, alpha-galactosidase, beta-galactosidase, glucoamylase, alpha-glucosidase, beta-glucosidase, haloperoxidase, invertase, laccase, lipase, mannosidase, oxidase, pectinolytic enzyme, peptidoglutaminase, peroxidase, phytase, polyphenoloxidase, proteolytic enzyme, ribonuclease, transglutaminase, or xylanase.